

Following are some notes aimed at providing a context for the negotiations with EB on the 4th.

- Before information can really become a commodity on a mass consumer level, there are two problems which have to be solved - availability (making it easy for people to retrieve information from wherever it's stored) and accessibility (enabling people to absorb it once they've got it). The intelligent encyclopedia project is aimed at solving both these problems in one comprehensive service. Underlying the project is a plan for constructing the leading information/knowledge service on a world scale.
- If we pull it off Atari will make mountains of money and become one of the world's major corporations. Even if we fail, which we won't, there will be lots of positive side side effects and byproducts of the effort which will strengthen Atari in numerous ways.
- Taken in its totality this is the most exciting "computer" ever conceived. Once it is announced it will bring respect to Atari and focus attention on the company all around the world.
- Atari is in the best position to succeed in this area. No other company comes close to matching the weave of positive factors represented by Atari's leadership in home entertainment, strong orientation toward the home and market, solid technological base, access to the diverse resources of WCI in many associated areas (notably Cable-TV publishing), and a high caliber research group headed by a scientist capable of inspiring and guiding (at least indirectly) all facets of the creative work necessary to accomplish our goals.

To the man on the street the "information explosion" is something people talk about, but nobody ever seems to do anything about it. Of course, this isn't exactly true. Laboratories around the world are devoted exclusively to information science. A number of relatively useful services have been developed, but they are so expensive or so limited in scope that most people rarely come in contact with them. Computers, which lie at the heart of the solution, are just now starting to appear in homes and offices on a large scale, although the level of technology is still rather primitive. We are at the point now where we can begin to "do something about it," and do it on a grand scale.

What is the "information explosion" besides an overused, trite phrase? From a quantitative point of view, the question seems straightforward. The quantity of what is known is increasing geometrically. But people rarely consider the question of quality. It's not just that information is growing in mass, i.e., that there is more to know, but that most of what people need to know these days tends to be extremely complex, whether it be global politics or astrophysics. The world was a simpler place 200 years ago. Most of the people and things that seemed to make a difference in a person's life existed within a small radius, and one could function fairly effectively within this space armed with a finite set of skills, some major precepts, and a dose of common sense. Not only is there more to learn today, but what is out there to be learned tends to be more abstract and complicated. People are desperate for a way not

only to manage the mass of information and knowledge but for a mechanism to help them absorb it; that is, to learn it.

If you deal only with the question of quantity, you end up with the "computer as a master filing cabinet" -- the computer stores all the information and knowledge and retrieves what you need on demand. This concept is handy (although the filing systems are still fairly primitive), but it only addresses half the problem. To make use of the information, there needs to be a transformation in the learning process. With a body of knowledge that is so much more complex and difficult to grasp, people need to be "smarter." They must absorb larger amounts of more abstract information over wider areas.

The intelligent encyclopedia is a mechanism for dealing with both the quantitative and qualitative aspects of the information explosion. As such it has the potential of becoming one of the ubiquitous tools of the coming "information age". Ubiquitous because it's so damn useful. The intelligent encyclopedia not only gets whatever facts you need with tremendous speed, but also provides the most flexible and powerful learning environment ever conceived. Some of its features include:

- ULTIMATE FACT REFERENCE TOOL: Questions can be asked in natural language. "Who hit more home runs, Mickey Mantle or Willy Mays?" "What is the third law of thermodynamics?"

- 4
- MULTIMEDIA: Capable of including audio and video of the highest quality, the intelligent encyclopedia presents information and knowledge in the form best suited to the particular subject matter. Text, photos, full-motion video, and sound can each be used to best advantage.
  - CREATIVE TEACHER: Not only will you be able to say, "What is the third law of thermodynamics," but also, "Teach me the third law . . .," whereupon the IE will launch into a simulation to teach you the basic principles. The system will be intelligent enough not only to answer your questions, but actually to analyze your progress, just like a master teacher, and prescribe alternative learning strategies when necessary.
  - DIVERSE INFORMATION RESOURCES: Links to all electronically stored information and knowledge, including up-to-the-minute news.
  - RESPONSIVE TO THE USER: Tailors responses to the needs, characteristics, skills, and learning style of the user.

The drawings on the following pages illustrate just how indispensable a tool we envision. Everyone, whether they be a child wondering how birds fly, or an executive trying to understand the intrinsic relationship between interest rates and oil prices, will turn to their intelligent encyclopedia several times a day. It will become an indispensable feature of daily life.

#### More Than a Souped-Up Version of Existing Encyclopedias

To recognize both the nature and potential of this product, it helps to understand that the work goes far beyond enriching the content of existing encyclopedias. Much more important is the development of an extremely flexible user interface. Our goal

is to enable the user to travel around "knowledgeland" as easily as he drives around town. All options have to be apparent and easily taken advantage of. What we envision is a system that models itself to the user's requirements. If one day you just want straight answers to simple questions, you can get that just by asking your questions. If another day you want to browse a broad domain, the system functions as an intelligent guide, pointing out interesting features along the way. If you want to be serious, the "guide" will be serious; if you're feeling playful, it may assume the persona of your favorite comic. The system "knows" who you are and always tailors its responses to your profile. The important thing here is that once you have that kind of power in the system, you have the potential of creating a major information utility. Because the interface is so powerful, we have the capability to establish links to all electronically stored materials, such that the user can travel from database to database through boundaries that are relatively transparent. Once you have that capability, you have for the first time the basis of an information utility -- one which can do for information and knowledge what the telephone has done for communication.

### The Market

When I was consulting for Britannica, I generated figures for them on the potential market for an IE of somewhat narrower scope than what is described here. The major premise

underlying those figures is that the system would be profoundly useful to an almost universal audience. Further, if not unique, the system wouldn't have more than one competitor on a worldwide basis. The system is so expensive to develop and requires a monumental effort by such a talented group of people that more than two parallel efforts would be inconceivable. (The present conception of the IE is at yet another level of complexity. If we get started soon, we can coopt any other efforts, at least at the high end.)

The Britannica figures, which are very conservative, are as follows:

- By 1990-95 there will be more than 90,000,000 homes in the U. S.
- If 5% of those homes subscribed to the IE for \$10 per month, that would generate revenues of \$540 million per year. The \$10 figure is analogous to the phone companies' basic charge. For \$10 the user gets unlimited usage of the basic system; interconnect charges to other databases result in add-on charges similar to long distance charges with the phone company.
- 140,000 schools and libraries could be expected to pay a minimum of \$1500 per year each, generating an

additional \$210 million. This figure is predicated on the assumption that while small "one-room" school houses might pay only \$120 per year, university libraries with hundreds of terminals would run up charges into the tens of thousands of dollars per year.

This brings us to \$750 million annual revenues for just the U. S. consumer and educational markets. When you add the international market and figure in the potential for business subscribers, it is clear that the totals become gargantuan very quickly. This can be a multi-billion dollar business.

What makes these figures even more attractive is that once you've put in the front-end money, you have a product/service which continually improves but is never obsolete; again the analogy with the phone system holds. Once it's in place the system is a cash cow which can produce profits at impressive rates year after year, even after allowing for substantial costs for continuous upgrade of the system.

#### How Do We Get from Here to There?

Getting from where we are today to the IE will require work on three different levels. The first is basic research in various fields that relate to the IE -- artificial intelligence,

8

cognitive science and learning theory, display technology, speech recognition and synthesis, man-machine interfaces communications, and networks, to name a few. The second is a major developmental effort to weave together the various strands of the basic research so that we begin to have an understanding of how the content of the IE should be integrated into a single complex system. Another way to understand this second level is as a research project into the methodology of an intelligent encyclopedia. The third level is the creation of the content itself.

In the main the research will go on anyway, whether the IE as a project exists or not. We have devised a strategy which permits much of the second layer of research and development to take place in the context of development of a number of short term marketable products. From the very beginning our strategy calls for two parallel lines of work: a long term track which consists mainly of basic research, and a short term track which combines research with product development. Neither of these tracks is especially expensive. The first is work that will go on anyway, so theoretically will add no costs. The second, while it may require an investment of \$10 - 20 million, spread over several years, promises a significant return on investment. It is the third layer, the creation of the content of the encyclopedia, which gets expensive. However, the strategy allows for a decision point, perhaps three years



down the road, where we could still bail out without losing big bucks if conditions don't look right.

An additional point about the long term track. By formulating and announcing the concept of the IE, we are creating a focus for much of Atari's basic research. A driving function such as this can be very valuable from many perspectives. First, as a motivating force which results in a higher quantity of quality research. Secondly, this magnet will attract people and the product of their research to Atari. An information/knowledge utility -- such as the IE is the dream of thousands of people. When word get out that Atari is working on this project under Alan Kay, everyone doing interesting work in related areas will seek to contribute their work to the effort, bringing Atari a bounty of ideas and talent. The encyclopedia project will allow Atari to benefit directly and indirectly from the efforts of a network of researchers that extends around the world. For many people, scientists and artists, the vision of the IE provides a reason to talk to Atari instead of any of our competetitors.

#### The Short Term

The short term projects/products are designed to do all of the following:

1. Produce revenues.
2. Extend our understanding of how to do the long term. By doing state-of-the-art work for existing technology, we can push our understanding in several areas, particularly machine/user interface, interactive learning, media selection (when do you use what media?), and simulation design.
3. Establish a presence in the marketplace: with consumers, with the creators of prestigious databases (e.g., The New York Times), and with major cultural institutions (e.g., the Smithsonian, the Library of Congress, etc.) which we will want to involve in the long-term project.

.The three principal short-term projects are described below.

### Online Encyclopedia

Starting with the existing databases owned by EB, including Encyclopedia Britannica, Compton's Encyclopedia and the Merriam Webster Dictionary, we can put together the premier online encyclopedia within three years. (Note: The term "online

11

encyclopedia" is used throughout to indicate a short-term product based on existing databases. The term "intelligent encyclopedia (IE) refers to the super-duper information/knowledge utility described earlier which will someday supercede the online encyclopedia.)

Currently, World Book is online with Compuserve, The Academic American Encyclopedia is online with Dow Jones and Lockheed's Dialog System, and the British Everyman Encyclopedia is also on Dialog. These online systems provide access only to entire articles and since the access is by title, you have to know precisely which article you want; there is no facility for browsing. In almost every way these online encyclopedias are worse than their print counterparts; they add no function whatsoever, but have all the added hassle of online communication. They have no illustrations. Encyclopedia Britannica is currently in the NEXIS system. NEXIS is a full-text system which permits searching for information with only a word or a number of words. NEXIS then presents all the articles that mention that word or series of words. This is a great leap beyond the others, but the complexity of searching in NEXIS almost requires the user to be a trained researcher to find what he wants. NEXIS still has no illustrations or browsing capability (and costs \$90 an hour to use). None of these online systems attracts a sizeable consumer market. Their value does not balance their costs (either time, inconvenience, or price).

Within three years we could have on the market an online system combining the full-text feature of NEXIS with a fairly powerful interface, permitting the novice user to wander in the database with considerable ease. Our basic standard is that it shouldn't be any harder to find anything than with print versions, and usually, it should be easier. Referral to related subjects should be much better than the existing print version. Not only will it be easier to go from Aardvark to Zebra, but the system can be programmed to point out connections. We would also expect to add, over time, computer graphics, both line drawings and animation, and a number of computer simulation programs on various subjects. If a user is studying electronics in the encyclopedia, for instance, he could elect to run a simulation of an electronic circuit design. An optional videodisc could provide color illustrations, a small number of motion picture sequences, and audio information.

The graphic capabilities of the system should at minimum be up to AT&T's PLP videotex standard. Ideally the system would be designed to work best with an Atari computer, but would be accessible to anyone with a microcomputer -- Apple, IBM, or even a high-quality Videotex terminal.

Communication/Distribution: The question of how to ship the bits to the consumer boils down to cable or telephone. While

15

cable holds the promise of higher bandwidth, which would permit faster communication of high-quality graphic images, still or motion, it is not likely that for the next five to ten years cable will have anything resembling the extensive network of two-way communication represented by the telephone system. For this reason, AT&T, with its offspring Baby Bell and their various network plans, is the most likely candidate to handle distribution of the online encyclopedia. As a major partner in the venture, AT&T could be expected to provide all the expertise and capital equipment necessary for distribution. [This would be a major contribution to the enterprise.] Good alternatives are not obvious.

Time Frame: Current plans call for the basic design of the system to take two years. An extensive pilot test will allow significant refinement during the third year. The third year would also see the beginning of the marketing push. Since the system's database already exists, we think this is a reasonable timetable.

What Does the Consumer Pay For: The context of the service will determine how the consumer pays for it. If the online encyclopedia is a standalone service, the consumer would probably be billed at a set amount per month for unlimited access. On the other hand, if the encyclopedia is one of the anchors in a broader home information/entertainment service which might include games, electronic mail, etc., charges might

conceivably be use sensitive.

We should consider designing an add-on attachment which would turn the VCS into a low-cost videotex terminal that, among other things, could access the online encyclopedia.

### Videodiscs

The online encyclopedia is the arena in which we will be studying many of the questions relating to how people use online information systems. The videodisc project will be the main avenue for investigating what interactive video is all about. We know that full motion video interactive video will be an important component of the IE, but little is known about how to use this tool effectively. It is proposed that we produce a continuing series of videodiscs bearing the Atari/EB name on a wide range of topics -- e.g., space exploration, ocean life, sports history, how to speak French, a reading program for kids, a guide to music appreciation, etc. With each program we will be exploring better ways to use visual images to communicate. Games will be an integral part of many of the programs as we strive to tear down the walls between education and entertainment.

10

Even though the player population will be large enough to make this a profitable undertaking, we would plan to increase revenues by issuing the same materials in various formats. For example, each program will be designed so that it is most powerful, fun, instructive, etc. when driven by a microcomputer. However, since the number of people who will have both Ataris and videodisc players will be relatively small by that time, we will plan to release the programs in two additional formats -- as stand-alone programs to be played on standard videodisc players, and as linear programs suitable for broadcast. [A note on "standard videodisc player." By 1984 it is likely that all three videodisc formats -- laser, RCA, and VHD -- will be able to do most of the same things. All will support freeze frame and random access, and can interface with and be driven by a computer. We won't have to worry about who is winning the videodisc hardware wars since our programs will be released on all three systems.]

Several reasons compel us to begin this work now rather than later. Because of the slow take-off in the consumer market, few companies have invested in original material for videodisc. However, the technology has definitely captured the imagination of a number of highly creative people who have been dreaming up exciting applications and are champing at the bit. The videodisc player base is about to reach critical mass, and it won't be long before some major company makes a major videodisc effort. If we begin now, we can have our pick of the most

16

interesting projects, before people start committing elsewhere. Given the newness of the medium the importance of working with the best creative minds should not be underestimated. Second, is that Atari/EB can still establish strong connections to several major institutions -- the Smithsonian, the Library of Congress, the Metropolitan Museum of Art -- whose holdings constitute a resource rich beyond dreams, just waiting for the proper medium to exploit them. In the course of my work for EB I discussed the possibility of doing discs with representatives of several of these institutions and received an enthusiastic response from them -- extremely enthusiastic. Last and most important, good footage which we might want to include as part of the system at a future time should be optioned now. The amount of great footage that exists is finite, and the longer we wait, the less will be available and the higher the price tag it will carry. The recent PBS program "Life on Earth," for example (25% financed by WCI), was widely regarded as one of the most beautifully photographed films on biology/evolution ever produced. An excellent disc could be based on it, and later the footage could be incorporated into the IE itself. It would be a shame to see someone else get it.

There are two ways we can go with the videodisc series. Pay for it all ourselves, or have Atari/EB produce the discs as part of a joint venture either with one of the videodisc hardware manufacturers (RCA, Matsushita, Pioneer, etc.) or with a major broadcaster (ABC, PBS, CBS, etc.). The Atari/EB name



17  
will draw many partners who would like to use our name and expertise to enter the videodisc market.

#### Microcomputer Software

The microcomputer software project will focus on several basic research questions, particularly simulation design. Results will influence future stand-alone and network software products, plowing the benefits of research directly back into our ongoing business. These products can become models for future generations of Atari software. But the lasting value of the microcomputer project lies in the contribution to the intelligent encyclopedia itself. The project will be designed to answer fundamental questions in generalizable ways, and will provide additional feedback from consumers on an ongoing basis to the ultimate design of the intelligent encyclopedia.

The goal of the microcomputer project is to produce a series of at least five exemplary products over a two-year period. We envision stand-alone versions of each product that will run on a variety of target microcomputers, as well as a version of each to run on the online encyclopedia network. In this way, we can maximize revenues by quadrupling the number of units sold. More importantly, we will be forced to design product concepts that move smoothly through different technologies. This will give our products evolutionary potential as well as

wide exposure.

Because the research goals of the project will necessitate close, ongoing involvement with the software developers, and because there will be times when answering research questions will take precedence over product schedules, development of this particular line of software must be driven by Corporate Research. Such a development scheme will also allow Research to directly evaluate, teach, and recruit development resources for the long haul. Once the products are complete, they can be funnelled into HCD for manufacturing and distribution. In this way, research goals can be met, and HCD can beef up its product line and realize handsome profits with no impact on its software development or product management resources.

Are We Aiming Only at the Atari Installed Base? (or Let's Get as Much Mileage out of EB as We Can)

It may be adviseable both to publish the videodiscs and microcomputer software under a separate label and to market these short-term products to run on several of our competitors' machines. Published under the prestigious Atari-EB label, these products will enable us to establish the class act in knowledge-related software. Marketing the products in the Atari-EB name will create visibility for the long-term association and will provide another class of products for

retailers, commanding additional shelf space. A high-quality image in product packaging should enhance revenues: greater perceived value will support higher retail prices. Tying the packaging of the microcomputer and videodisc products together should create even greater benefits at retail, including enhanced scope, variety, and retail presence. We can protect our own hardware business by giving the Atari versions a six-month head start in the marketplace.

The products can also be sold by EB through its direct sales force, singly or in series (presumably the actual Atari-EB line will consist of more than the titles being done as part of the IE project). EB distribution will also bolster penetration in the school market. Combining Atari and EB distribution channels, as well as offering products for different machines, can be expected to increase unit sales by several multiples.

#### A Few Points about Encyclopedia Britannica

As a 213-year-old company, one of the oldest English language publishing companies, EB is as solid as they come. By doing what they do best, selling encyclopedias by direct sales methods, they have weathered storm after storm successfully. Their unbending reliance on the foundation of their name and charter accounts for this stability. But they recognize that the advent of electronic media has put them up against a dilemma that they can't just tough their through. For years now companies and individuals have come to EB with one scheme

20

after another, each suggesting ways to exploit the Britannica name and database in the "new technologies" area. EB has successfully resisted all comers to date, mainly due to the current management's overly cautious nature. However, feeding that paralysis is a sharp fear of doing anything which might jeopardize their bread and butter -- the sales of print encyclopedia. They are in the difficult position of wanting/needing to advance while they guard both their rear and their supply lines all at the same time. Atari represents a TOTAL solution to them. There are the obvious benefits to be gained by association with Atari's image, as well as the depth represented by Atari's commitment to long-term research. They are very impressed by Alan Kay, in whom they see the breadth of vision that is necessary to transform the very concept of the encyclopedia. EB is particularly comfortable with Atari's orientation toward the home which parallels their own orientation very closely. The whole WB confusion definitely caused EB to grasp at a much deeper level exactly how much they wanted to work with Atari. Their fear that we could still go with WB undoubtedly provides us with a certain amount of leverage.

The depth of EB's interest in working with Atari is indicated by their increasing willingness to invest ever greater amounts of their own money. According to the last figures suggested by Van Doren, and later confirmed to him by Swanson, EB might be willing to invest as much as \$3 - 5 million per year (constant

dollars) over the long haul.

#### International Connections and International Editions

As I have mentioned in several other memos, EB is highly regarded around the world. Wholly owned subsidiaries in Japan, Australia, Canada, Western Europe, Britain, Phillipines and Korea sell more than 50,000 sets of EB. Plus EB is involved in numerous joint ventures which publish encyclopedias in many of the major languages of the world - The French Encyclopedia Universalis (20,000 sets); the Barsa Spanish and Portuguese encyclopedias (60,000); and the Italian Il Modulo (12,000). Under and exclusive agreement with the Chinese government a major Chinese encyclopedia based on the Micropedia is currently under development. The prestige connected with the Atari/EB name should allow us to establish significant penetration in foreign markets for the videodiscs and microcomputer software lines. With EB's help deals could be struck in many countries to adapt the IE for use in that country. The international market for the IE should be immense, especially if we can make deals to get it adapted for several key countries.

#### Complex Projects Require Complex Structures

Although probably not true in all cases, nor a goal to shoot for, this phrase will inevitably apply to the encyclopedia project. However, EB's willingness to invest large sums of their own money simplifies matters since it is now reasonable to propose a joint venture to produce both long and short term

products. It is assumed from the beginning that the joint venture with EB must bring in other partners for limited or general purposes. For example the Atari/EB venture could bring in AT&T to play a role only on the online encyclopedia, or to be a more general partner. This principal applies also to other organizations which bring something necessary and unique to the party such as The New York Times, CBS, or Time-Life. Calculating investment will be complicated since part of everyone's contribution will be "in kind" -EB providing its database, (eg.) AT&T its communication network, and Atari its research capability. Presumably EB's share in the venture might change over time. For example they may own a bigger piece of the venture during the short-term when their investment represents a bigger percentage of the whole, than over the long-term when even the (for them) sizeable sums they are willing to invest are dwarfed by the development and capital costs. Van Doren and I have discussed this in the past, and he sees no particular problem from EB's point of view; they understand that in the electronic environment they must settle for being smaller fish in a larger pond.

During the first several years, Atari should be able to charge a significant portion of its contribution to the venture to the research budget; that is with funds that would be spent anyway - venture or no.

### Structure For Carrying Out Work

For purposes of discussion I want to distinguish three main areas of work - basic research, development of product (creation of content), marketing and distribution (including communications). During the first few years all basic research will be conducted by Atari research. In terms of product development, the design of the interface for the online encyclopedia, the creation of graphics and computer simulations for the online encyclopedia, the production of videodiscs and microcomputer software, EB will be primarily a silent partner, providing mainly money. EB will want to exercise some editorial rights, at least to pass on the content, but this should not be a problem, in fact it will lend an air of credibility. Additionally EB should be relied upon to use their good offices in appropriate situations, eg. helping us to work out an arrangement with the Smithsonian for a videodisc project. Atari, of course, doesn't have all the necessary people in house to develop all the videodiscs programs, software etc. Many of these programs will actually be produced by independent contractors under our direct supervision. (The potential Atari/EB Bank Street deal referred to in an earlier memo is an example of how this might work.)

Distribution of the short term online encyclopedia would be handled by whatever company is brought in to handle that end of things (AT&T or whomever). Marketing and other distribution questions will have to be handled by the joint venture itself.

However, especially in the first few years, the joint venture will look very much like an Atari subsidiary, much the way the camps look like a sole Atari project to a visitor from the outside.

Within Atari we need to form a cross-divisional project or mini-division which will oversee all aspects. Within that matrix, Atari research must be relied on to oversee the initial short-term product development. Given that a key reason for the short-term products is their role in understanding how to do the intelligent encyclopedia itself, it's crucial that the development of these short-term - the online encyclopedia, videodiscs and special line of Atari/EB software - take place in the context of the long-term goal. Developing them out of this context threatens to dilute their value. The reason for suggesting this is not that Atari Research can necessarily do a better job of product development, but that with a project as complex as the intelligent encyclopedia, the parts must contribute to the whole in a way that maintains the integrity of the whole structure. We can structure the short-term product development within Atari Research so that it doesn't disrupt, and in fact contributes to the long range research efforts.

The Atari Institute for the Art and Science of Knowledge

Given that the IE requires a thorough rethinking of how knowledge is represented and transmitted, the content of the IE



will have to be created largely from scratch. We can't just take text from books, movie footage from over here and some photos from over there and transport them as is into the IE. A thoroughly interactive learning environment such as the IE will require a fresh approach. Creating the content of this encyclopedia will be an intellectual and artistic task of mammoth proportions. Because of this, we suggest that two or three years into the project we create something like the Atari Institute for the Art and Science of Knowledge. Located at a major university in a stimulating metropolitan area (Harvard, Columbia etc.), this institute would have two main tasks. One is the theoretical task of deciding how each subject area will be treated. The second is the practical task of assigning people (from around the world) to actually create the content, and then assembling and editing the parts into a coherent whole. In the main this second task requires two types of people to work together. One group, subject area experts, understand the message. The other group, media experts and artists, understand how to communicate ideas. In the main, the content of the encyclopedia will be created by teams of people representing these two aspects. Locating at a major university in a big city gives us the best bet of assembling the array of talent needed. We could set up an institute like this from scratch perhaps, but it would be prohibitively expensive. Connected to a university we would have access to its resources, professors and graduate students (a great source of inexpensive, highly motivated labor), libraries, and the general richness of the intellectual environment.

April 23, 1982

Dear Alan,

Following are some notes I thought you might like to see before Tuesday's meeting with EB.

Who we are meeting with - Charles Swanson, President EB Inc.  
Charles Van Doren, VP, Editorial  
James Sloan, Director, Planning & Development  
Peter Norton, President EBUSA (US sales org.)

We will be coming in the day after the bi-monthly meeting of the New Business Committee (consisting of the four above plus the treasurer of EB Inc. and the president of EB International which is the international sales organization). While this committee has considered little else besides "new technologies" for some time now, they seem to be relatively befuddled. Up until now they have opted for the "let's get another report" approach and its close relative, the "let's see how the market develops" strategy. In short, they have made no definitive moves whatsoever and seem to be getting more and more nervous as time passes. At the last meeting there was a flurry of interest in microcomputer software which was seen perhaps as the area to move into initially. The main responsibility for investigating this was given to Sloan who has returned to this meeting with a 600 page report.

Jerry Rubin has been invited as a guest to Monday's meeting. According to Van Doren, Rubin will propose to EB that they work toward the creation of an "intelligent encyclopaedia" employing the videodisc/on-line combination (proposed in my report). Evidently Rubin has been doing a lot of thinking on this, since when I met with him in February he thought the idea was "unrealistic." Rubin is highly thought of by Swanson and, again according to Van Doren, they are thinking about making him the head of a new company, "Future EB," which would be responsible for directing Britannica's efforts involving "new technologies." I wouldn't be shocked if they took this step since it would take a lot of the burden off Swanson et al for making decisions they really don't feel capable of making.

I will meet with Van Doren Monday night after the meeting to find out what Sloan recommended, how it was received and the substance of the discussion with Rubin etc. I'll relay it to you Tuesday morning before we go to EB for lunch.

Van Doren has sent a memo to Swanson, Sloan and Norton explaining that our purpose in coming is exploratory, ie. they shouldn't expect us to make any sort of concrete proposal etc. They are giving us the full-treatment, lunch at the Mid-America Club plus have blocked out a significant

bunch of time for extended discussion. They may have their own agenda, but I'll guess they mainly want to hear what Atari is all about and to help us understand where they are at.

Telling them about Atari - The Atari name is a double-edged sword as far as Britannica is concerned. On the one hand Britannica likes the idea of teaming up with a company like Atari because it counters the stodgy image with which EB is appropriately associated. On the other hand, they worry that the Atari name may somehow demean the Britannica product. In other words, the very thing which attracts them to Atari, which is its image of being "exciting and fun" is what scares them as well, since whoever heard of an encyclopaedia which was exciting and fun. Leaving aside for now the idea that in fact an encyclopaedia should and now can be both exciting and fun, it is safe to assume that Swanson etc. know very little about what Atari is actually about. They have seen a memo from me to Van Doren which talks positively about the Atari computer and the thrust of the company's efforts in the home market, but I doubt they know much else and clearly they don't know that too well. I think they will be very interested to hear you speak about the plans that you have for Atari, the sort of projects you are undertaking and the joint ventures you are considering. If you feel you can talk about it, I am sure they would be impressed to hear the story you told me about the three projects that you set as a condition for moving to Atari and Atari's agreement. With the exception of Van Doren and to some extent Norton, EB's management does not consist of intellectuals. However, I think Swanson will be glad to hear of your long and profound respect for Britannica, particularly EB3. Everybody says it of course, but you so obviously mean it that I think it will have a very good effect. We want them to see the truth of the matter - that beneath Atari's somewhat frivolous public image lies a serious organization with some very serious plans. The tremendous sums of money at Atari's disposal will no doubt excite them as well. Also, they are of course star-struck and will love hearing about the connection with Lucasfilm etc.

To put all this another way, I think EB's initial reasons for being interested in Atari is that they figure Atari is tuned into the marketplace in a way Britannica isn't and probably couldn't be - ie. EB is mainly hip to Atari as electronic game maker to the world. What they don't realize is the scope and depth of the plans Atari is making to have a profound effect on the personal computer market. They have no idea what a good choice Atari would be for a partner for EB in the development of an intelligent encyclopaedia. We can definitely help things along by making it clearer to them on Tuesday.

As far as what we are looking to find out in the course of discussion, I think it breaks down into the following questions:

1. What is the range of electronic products that they are seriously considering?
2. As far as an electronic encyclopaedia are they leaning towards:
  - a) just putting the existing Britannica online
  - b) creating an encyclopaedia of a new type, along the lines of the "intelligent encyclopaedia."
  - c) a full-blown "information and knowledge service" including the "intelligent encyclopaedia" plus other components - up-to-the-minute news, bibliographies, full-text of books and articles etc.
3. Given their concern about making sure not to hurt the foundation of EB (the print encyclopaedia) in the course of developing something new, what do they see as the key aspects that need to be safeguarded? Is it simply a case of cash flow or is there more to it?
4. Assuming an agreement were reached to develop an "intelligent encyclopaedia," would EB be able to commit a portion of its present staff and facilities to the editorial development or would they want to develop it separate from existing structures?
5. What are their key concerns about potential partners? Do they have any particular concerns re: Atari, Warners etc.? Do they have any existing arrangements which would affect the possibility or nature of an arrangement with Atari. Specifically here, how does their relationship with EBEC (the wholly separate co. that produces and distributes Britannica films and distributes Britannica products to libraries and schools) come into the picture?
6. Are they open to an exclusive arrangement with Atari, ie. one where EB and Atari join together to create a substantial product - such that EB would participate in the creation of only one "intelligent encyclopaedia."

Obviously we are not going to take their answers to these and other questions as the final word. Hearing their responses however will let us understand much better who we are dealing with and from that how to put together a successful proposal for what we want.

#### On the Question of Videodiscs

Given the thrust of the report I did for Britannica and the recommendation that Rubin is supposedly going to make at the Monday meeting, the question of videodiscs and their relation to an "intelligent encyclopaedia" is bound to come up. While I realize that Atari's position on this will take time to develop, I thought I might put forward a few ideas here. Given your qualms the best thing I can do here is probably to take the position of advocate. So... why discs?

For me the most important reason has to do with content. There are numerous subjects in an encyclopaedia which cry out for full color photographs, motion pictures and sound. It's not sufficient to describe a Van Gogh painting with words, even if accompanied by a schematic drawing. People should be able to see filmed sequences of the salmon's breathtaking struggle to go upstream, footage of the moon landing and Jupiter fly-by, etc. When a person looks up Bach he should be able not only to hear representative pieces but to have the thrust of Bach's music explained with the aid of an example. The list goes on.... Adding these aspects to the intelligent encyclopaedia doesn't really make it any more intelligent (at least the way we are using the term) than the current Britannica, but it makes it a far richer, and I would argue much more powerful tool.

Assuming one agrees with any of the above, turning to the videodisc as a solution (at least for the next 10 years or so) seems inevitable, as it will likely be at least that long before computer technology advances to the point where it will be possible to deliver all the pictures and sound to the home in an economical fashion without a videodisc.

(I won't get into the question here of whether the videodisc player has to be in the home itself or at some head-end facility. As you know I tend to think it needs to be in the home, but that is beside the point here.)

Another reason which may sound a little chickenshit (or circular), but which I think has validity is that people are going to expect it. Although it will be a few years coming, the marketplace will begin to fill with a host of videodisc-based learning programs and encyclopaedic applications. People are going to look for a modern encyclopaedia to have a video and audio component. If you don't make it a feature of the product you are offering, I think you leave yourself open to serious competition from others who may not have anywhere near as "intelligent" an encyclopaedia.

One Disc Versus Many Discs - There is clearly a tradeoff here between the relatively small amount of material that can be included on one disc and the inconvenience inherent in having to switch from disc to disc (something which is inevitable no matter how nifty a plan is devised for placing material on the discs). This is instinct on my part, but I tend to think that people will be willing to put up with switching discs as long as there is some rhyme and reason to the placement of materials on the discs in the first place (ie. as much as possible make it topical first, alphabetical second). This is one of those situations where it seems necessary not to underestimate the user, both his ability to deal with inconvenience and the extent of his desire to access and learn from the material. After all, switching discs on a disc player is no where near as difficult or tedious as changing floppies and loading in new programs etc. People are used to changing records and also used to reaching for different volumes of an encyclopaedia.

i.e., whereas changing floppies is an example of a task of unacceptable inconvenience, changing videodiscs is probably an acceptable inconvenience --at least until alternatives can be developed.



### Converging Paths to a Single Goal - The Intelligent Encyclopaedia

For discussion sake, let's suppose that the product we are working toward comprises text, full-color still and motion pictures and audio. Clearly we've got a vast number of problems that need to be solved in the course of creating such a product. At the top of the list is the problem of designing the appropriate hardware and software that will give us an encyclopaedia that is both intelligent and easy to use. (Navigating in "knowledge land" shouldn't be more difficult than driving a car. Actually in some ways it should be easier since it shouldn't require such highly developed motor skills and coordination.) Second is a whole host of pedagogical and content questions having to do mainly with how do you use and mix the various media at your disposal most effectively. With the video and audio component there is the further problem that even once you've solved some of the pedagogical and content problems it would be many years before you could accumulate sufficient material to even approach the range necessary in a general encyclopaedia. So, given the range of problems to be solved and the desire to get something on the market in a relatively short time, it seems necessary to approach the "final" product by working on at least two different products which can stand on their own at the beginning and lay the basis for a much more complex single product in the future. In this light it might make sense to consider producing initially an online intelligent version of the existing Britannica and a series of videodisc programs.

It is plausible that within a few years we could have ready an online intelligent version of the existing Britannica, sans pictures but with line drawings. (Initially we are talking about a relatively low level of intelligence - perhaps enough to at least provide the user with help in understanding the connections between areas of knowledge - ie. helping him to focus his efforts and apprising him of alternative paths relating to the same subject matter.) With this on the market we can continue the work of raising the level of "intelligence" and begin in earnest the development of a new editorial content which really exploits the computer power underlying the system. That is when we begin to develop, for example, the "chemistry section" that permits the user to do simulated experiments while "in" the encyclopaedia etc.

I would suggest however that in order to market something really useful in as short a period as two years, it would be necessary to conduct a limited experiment first. I don't know how difficult it would be to take the existing text of the Britannica, develop a search protocol and offer it to a small # of QUBE subscribers somewhere, but if possible such an experiment seems necessary as we need a way to study how people would use such a service, the problems they naturally encounter etc. Just consider the problem of designing an index that allows the user to understand both how to get to a particular bit of subject matter and further how that subject relates to others. How much information does the user need and how is it going to be represented. There has been precious little experience with the untrained home-type

user on a full text retrieval system. We are going to have to have that experience before we can design with assurance. (I think Britannica would like the idea of this experiment as a starting point, especially if Atari were picking up the tab.)

Videodisc Programs - I think there is a gross underestimation of the difficulties involved in designing for this multi-media medium, especially when you consider putting it under the direction of a computer and mixing video and computer material. I am not referring here so much to the technical problems as to the content problems - when to use what (stills, motion, sound) and how to integrate it with the computer materials so that the content "works" for the user. The suggestion is that we develop with Britannica (and Lucasfilm) a number of videodisc programs on different subjects (eg. space exploration, dinosaurs, etc.) each of which would stand on its own. The idea would be to do developmental work on how to use the medium and yet also have a marketable product to show for our efforts. I am fairly sure these videodisc programs could be made to pay for themselves in the long run. With the expertise of Lucasfilm and Atari, the distribution strength of EB and Warner and the Britannica name, these discs will be winners enjoying wide sales. Given the participants, it is likely that either Sony or Pioneer would like to get involved in a project like this, taking some of the financial burden.

Does the Atari-Britannica Information and Knowledge Service require a daily news capability?

One question that might come up with EB is how to handle truly current developments in the news. There is undoubtedly a difference between the types of information you go to an encyclopaedia for and the types you turn to a newspaper for. While you might go to your encyclopaedia for background info on the Falkland Islands, you are going to turn to your newspaper or TV for the latest news. Even if EB were online you wouldn't necessarily want it to update its articles on a daily basis. It seems that an encyclopaedia article requires the advantages of hindsight., ie. you really don't want to rewrite the EB article on the Falklands until the dust settles. On the other hand, you could argue that the Atari-Britannica I&K Service could/should provide both sorts of information (ie. long and short term analyses) if it included as part of itself the content of an active news organization such as the New York Times. From the user's point of view there is a lot to be said for not having to flip back and forth between different databases (logging on and off etc.)

I hope some of this is useful - at least as a basis for focusing future thought and discussion.

Bob

April 29, 1982

Dear Alan,

Following are some notes and ideas coming off the meeting with EB on Tuesday (plus my dinner with Van Doren the night before).

Evidently Monday's meeting of the New Business Committee, including the guest appearance of Jerry Rubin (formerly of Mead Data Central), set the stage for our arrival. Jim Sloan's recommendation that EB enter into an agreement with Radio Shack to produce and distribute microcomputer software was met with little enthusiasm and died a quick and quiet death. While this was mainly because they seem to be relatively unimpressed with Radio Shack, at least Sloan and probably Swanson are still interested in the idea of "Britannica Software." Rubin's pitch for a videodisc encyclopaedia was not very well received either and it seems less likely now that they are going to do anything with him. As I understand it, it's not so much that they didn't like Rubin's idea as that ideas are cheap and Rubin doesn't really bring with him the means to bring his ideas to fruition. He brings no \$ and has no organization behind him. Overall, Monday's meeting left them more befuddled and nervous than before. Van Doren's analysis which I think is accurate is that more than ever what they want is someone to come riding over the hill with both the vision and the means to rescue them from their predicament. DUM DA DUM! ENTER ATARI!

We Did Good - As you now know for yourself, these are not your outwardly enthusiastic types (with the exception of Van Doren). Having been through five or more meetings with the same crew, I can say that this is the most animated and positive I have ever seen Swanson and Sloan be. They were visibly impressed with your presentation which accomplished the key task of making them understand that Atari is far more than arcade games - that it is in fact one very serious company with some very exciting plans, a savvy management, and a tremendous future. The most effective aspect of the presentation was the way you combined a vivid description of the projects you are contemplating with the frequent reminder that Atari is, after all in business to make money. This promoted the view that Atari combines the elusive and crucial elements of vision and business sense. As we added to that a sense of Atari's strong orientation to the 'home' market, Swanson & Co. found the idea of hitching Britannica to Atari's star increasingly desirable as the meeting progressed.



As to where we may have been a little weak, I think we may have left some question in their mind as to how much your enthusiasm for the Britannica deal represented the position of Atari's management - especially given your comment that you might not have gotten around to the encyclopaedia project at this time if I hadn't happened by when I did. In light of this, an invitation from Ray Kassir to Swanson (and whomever) to come out to Atari for a visit seems to be both appropriate and important. (After lunch, Swanson actually suggested such a visit as a likely 'next step.') Even if the timing for such a meeting can't be worked out for a while, the invitation should be made as soon as possible to reinforce everything positive that transpired in Chicago. (I don't know if the Warner company jet is available for such things, but it might be a nice touch.)

EB's concerns - As Swanson laid it out EB has three basic concerns that must be dealt with if they are to enter into a major joint venture which would produce and market a major electronic product:

1. The transitionary period - Since EB's financial base is the sales of encyclopaedias and yearbooks, they are scared to death that even the announcement of an electronic encyclopaedia would cut seriously into sales of the books. Besides being the major source of their current paralysis, this fear causes them to want to limit the scope of initial electronic products to something 'less than' the encyclopaedia itself.
2. Revenues to the University of Chicago - The main beneficiary of EB profits is the University of Chicago and evidently EB feels some responsibility to keep those revenues coming. Clearly UC which is represented on the EB board feels the same way.
3. Sacred Institution - Over and above financial considerations, there is concern for the institution itself, that it remain in the hands and under the control of those who will protect and extend its value and reputation. Evidently when Benton died he threatened his successors with fire and brimstone if they let EB be sullied or devalued in any way.

Of these three, only the first presents a serious problem. (UC stands to get rich from a joint venture between EB and Atari. And, while it will be necessary to convince EB of Atari's good intentions in terms of safeguarding the institution of Britannica, that shouldn't be too difficult even if you have to build it into the structure of the deal itself.) As for the question of how EB is to get through the transitionary period this is a complex and thorny issue which must be dealt with satisfactorily if a successful deal is to be struck. However, whether it is by making the initial product something less than Encyclopaedia Britannica or some other scenario is a question I don't think we can or should answer yet. Clearly we need to do some hard

thinking about what would be the best course for Atari. Taking into account technical considerations, questions of content and time, market conditions etc., what kind of product, sold on what basis makes the most sense for Atari. After we understand that, we can go back and try to figure out how to weave the EB deal into it. (For example, we need to consider the extent to which the existing EB is suitable as a database around which to build an initial service. If it makes sense we should figure out how to structure the deal etc. so that EB goes along with it. If that doesn't make sense, we should figure out what the alternatives are etc.) If we start with what EB wants rather than what Atari wants I fear we will end up in sorry shape. After all, which company is providing the vision here.

Nature of the Deal - As I understand it now, the greatest value of EB to the enterprise we are considering is not the marketing value of the name, although that is significant, but the database EB has compiled over 200 years, plus the weight its name brings to bear on those scholars, experts, scientists etc., whom we will need to call upon to develop the content of the "intelligent encyclopaedia." I don't understand the financial implications of all the possible arrangements, but I figure we want a structure which joins Atari and Britannica in a very tight bond - particularly one which prohibits Britannica from contributing its database or name to a competing product. Since the enterprise we are talking about becomes the future of Britannica itself (down the road when the print version if it still exists is of vastly decreased importance) I doubt highly that we can purchase it at the comparatively low cost of royalties alone. Rather, I expect the Britannica Board will want to have some significant organizational connection to the product and its development. My guess is that they will want some sort of joint venture. Certainly this seems to be in Atari's interest as well. When Van Doren and I discussed this at some length he mentioned an arrangement EB has with a firm to develop an encyclopaedia in South America whereby EB put up no money, but in exchange for providing its database was given a 25% interest, with an option to increase that percentage up to 50% with the profits generated by the venture. He suggested a similar arrangement with Atari, with the question of the highest percentage EB would be permitted to purchase to be a point up for negotiation. He suggested further that EB might be given 6 members of a 13 member board.

Encyclopaedia Britannica Educational Corporation (EBEC) - This is the separate company that Benton set up under his will for his children. It produces and distributes Britannica films and by contractual agreement is the distributor of EB materials to schools and libraries. According to Swanson the contractual

agreement between the two firms can be dropped without too much difficulty. This is good since EBEC presently has a hold on all distribution of Britannica materials to schools and libraries. Interestingly, Swanson mentioned the possibility of buying EBEC from the Benton children. I'm not sure offhand what value EBEC represents, but it is an option that perhaps should be investigated and considered.

EB Board of Directors - Given that the current EB management is of the caretaker variety, the ultimate power at EB undoubtedly resides with the Board of Directors. If Mr. Kassir feels it is appropriate, it would probably be good for him to arrange to talk with Anna Hoffman, one of the heavyweights on the board, to begin to get an accurate view of the Board's perspective on all this etc.

Bob

## ENCYCLOPEDIA BRITANNICA DEAL

### How the Contact Came About

Last year, Bob Stein, a consultant interested in video disks and other technology, wrote a critical letter to Encyclopedia Britannica (EB) accusing them of being stodgy and not moving with the times. The arguments were so well presented that they commissioned him to do a study about a future kind of EB. His study was rather conservative, well written, and concerned itself largely with using video disk-like methods to augment the existing materials. In his travels, he visited Lucas films and learned of their interest in branching video disks. Some years ago he had heard me give a talk. On the basis of that and his understanding of what had been accomplished at Xerox PARC, he recommended that Xerox would be the ideal corporate partner for EB.

When he learned that I had gone to Atari, he got quite excited and approached us. I had not planned to develop a strategy for a home information service until after the summer of '82, but realized that here might be a tremendous opportunity. I tested the EB relationship idea with Ray Kassir to see if he thought it might be too stuffy an image for Atari. On the contrary, he was totally enthusiastic about the idea.

I subsequently hired Bob Stein as a consultant partly because of his inside knowledge and contacts at EB, and partly because he is an excellent fellow to work with.

### April 27th Meeting

After an initial contact with Charles Van Doren, a V.P. and one of two head editors, I met recently in Chicago with some of their top people:

Charles Swanson, President EB Inc.  
Charles Van Doren, V.P., Editorial  
James Sloan, Director, Planning and Development  
Peter Norton, President EB USA (US Sales Organization)  
Bob Stein and myself

This meeting was a day after their bi-monthly get together of the New Business Committee which includes the above. During this meeting, they rejected a proposed liaison with Radio Shack and considered the possibility of a new venture company headed by J. Rubin (former president of Mead Data Central) to build essentially what was detailed in Bob Stein's report.

Bob had met with Charles Van Doren the night after this meeting and was able to give me a combined written and oral briefing before our meeting. This turned out to be quite helpful.

### What I Told Them

The meeting lasted for about 3 hours. First I told them how Atari had come about and how the intersection of R. Kassar with the company had led to an unprecedented growth. I explained that Atari's interest in the home went far beyond games; it is reaching towards becoming the electronic communication and entertainment environment for American homes. We talked about Atari's interest in education particularly learning, and how we (and especially I) felt about EB.

Then I launched into my vision of the project. It would be a long-term relationship. The goal was not to imitate the paper medium or even specifically to augment it. Rather we would propose to start afresh with the ideals of EB: to be informative, to be stylish, and above all to be a resource from which important starts can be made in learning most things.

This didn't do violence to short-term video disk projects but it made clear that current video disk technology would not serve EB's own conception of itself.

Then I got them to visualize a new kind of computer system acting as a communications medium between Atari consumers and knowledge they would like to acquire.

Since not a lot is known about the final form of such a system, I explained that it would be designed inherently to grow, and more importantly to have any collection of parts in it rapidly changed as we found new techniques. Because of this "constitutional approach" to systems design, a very important strategy would be enabled.

The changability of the system would permit including the current online version of EB without it getting in the way later on. We would be able to offer it as a service in late '84 or early '85 and start to gather revenue even as the main body of the project proceeds.

I then talked to them about how flat text is, no matter how well written, for many subjects in EB, especially those with built-in dynamics such as electronics, history, music, biography, etc. The idea of supplementing or replacing articles with dynamic situations that could generate animations and explanations excited them greatly.

My conception of the project is one that spans about ten years. The first several are occupied with the "constitution" and with setting up the initial service. The following years are devoted to making money and in enriching the corpus as it moves from pure text to a more graphical and entertaining adventure. This project is a lot like Disneyland actually. There is an initial conception

which allows most interesting things to be explored under the context of "lands". The first level of park is built. Its success leads to constant enrichment of the basic ideas. I also mentioned that Atari was going to do such a project regardless. All the reactions to the idea were quite positive as far as Bob and I could tell.

Van Doren is and has been quite enthusiastic.

Sloan and I discovered we have quite a bit in common and the high potential for hostility from EB's Director of Planning and Development never materialized.

The other potentially hostile member of the meeting was Peter Norton, the President of EB's sales organization who would be most affected by a change in media. His comment was interesting: "I hate to see it happen. But it's going to happen. I don't want to wake up in the morning and read that someone else has done it. Therefore, we should do it!" His concern is less that this project will start to cut into paper sales than that people will not buy paper if they hear that an electronic version will soon appear.

Charles Swanson, the head of the company is a nice "gentle-man" of the old school. He strongly sees himself as a caretaker of a legacy left him by Bill Benton, the driver that shaped the 15th edition. Swanson is not a mover and shaker but he seems to be for our plan. He will not walk through fire to see it implemented.

The Board of Directors is the key. The most powerful members are Anna Hoffman, and Mortimer Adler, the force behind Great Books, the Syntopicon, and the organization of the 15th edition of EB.

#### The Next Step

We should invite critical people from EB to Sunnyvale before this meeting cools.

R. Kassar should have a comprehensive discussion with Anna Hoffman.  
A. Kay might tag along.

A. Kay will meet with Mortimer Adler, perhaps with Charles Van Doren.

A. Kay, R. Stein, S. Weyer will draft an initial version of the proposed project.

### My Conception of the Possible Deal

EB's gross is about \$350M per year. They sell about 150,000 EB's each year. They have 1,000 salesmen who sell about 50% to consumers, the other 50% to bookstores and libraries. The 15th edition cost in total about \$63M. Initial budget was \$18M and swelled into the \$30M's before they got it out the door. One of the principal beneficiaries is the U. of Chicago.

They don't have much loose cash. Atari would have to finance most of the project, but let EB pay more back as the profits come rolling in. This doesn't seem unreasonable. They already have invested an enormous amount in material to which we are going to add Atari's name. They also have some intangibles. When EB writes a letter to ask a scientist or anyone else to contribute an article, they don't get turned down, no matter how famous, rich, or busy the person is. It's like Scientific American only more so. The potential for bringing good people to Atari to work on this and other projects can't be underestimated.

The best way to do this is as a joint venture company that combines the Atari and EB names, promoting "us" as opposed to "we" and "they". Judging from the discussions I would think that this would be agreeable.

It is important for us to realize in every discussion with them that we are dealing with what I call the "New England" mentality. EB is 220 years old and these people are justifiably proud that they are the latest in a shining tradition. We have to show them that this new proposal will fit into and glorify the tradition. This is especially important when dealing with the Board. I made certain that they realized that Atari is a bit of a Wild West Show, so they wouldn't be completely disoriented by our style - but that we have intentions and ideals very recognizable to them.

Making lots of money is not their main bag though they are realists and have not done badly at it. The romance of knowledge and its access is their thing. That is where our strength in convincing them lies.

ACK:ccr

May 26, 1982

Dear Alan:

Following are several lists of questions, broken down into rather loose fitting categories. The lists are not intended to be either definitive or exhaustive. They are just to get us started. As you will see, I've aimed for breadth rather than depth. Even so, I've certainly not gone as wide as we need to. Given that this is potentially one of the most ambitious (and exciting) intellectual undertakings of all time, I've undoubtedly neglected large areas of concern. Besides the ones I've missed there are many more which will show themselves as the work unfolds.

During these early stages we are going to have to operate on at least two levels - deciding what we want and deciding what to propose to EB. In general the second should be generated from the first - although the first is obviously an ongoing task which will extend well beyond the initial proposal we make to EB.



## Nature of Product - Long Range

A. Content (purpose, point of view, audience etc. as opposed to form which has largely to do with technology, recognizing that in many areas the boundaries overlap)

### 1. Analysis of existing encyclopedias

- how are they used, by whom and how successfully; by what criterion should we judge this?
- what are the good and bad features of each of several major encyclopedias as seen by various types of users, librarians, teachers, etc. - implications for us?
- understanding of any of the above won't necessarily provide any direct answers in terms of what we want to do, but it seems reasonable that one part of understanding what an electronic encyclopedia could be all about is to understand print encyclopedias as well as possible. Clearly we are not trying to recreate these in an electronic form, but we don't want to ignore any key functions they perform, nor do we want to miss the opportunity of identifying & solving ~~to solve~~ certain problems that these encyclopedias have not been able to solve in their current form (eg. a suitable mechanism for indicating the numerous interconnections between different subjects or finding a way to function as a medium for both fact reference and learning, without giving short shrift to either).

## Nature of Product - Long Range

Content cont.

### 2. Audience - who are we aiming at primarily?

- children? adults? what educational level?
- if both children and adults, does that mean there is a subset of the whole specifically for children and a subset for adults (eg. one product which comprises both "Atari-EB" and "Junior Atari-EB") such that the user can consciously choose which mode they want?
- how do needs and requirements differ between children and adults and between adults (and [cultural and sex differences?]) children) with different experiences and education? how to deal with these differences?

### 3. Purpose of an electronic encyclopedia

- mainly for learning or mainly for reference?  
can one product answer both needs?
  - what are the different reference functions an electronic encyclopedia could serve?  
fact reference, research, etc.?
  - what are the various types of learning that might be considered? eg. learning 'about' a subject, which is rather casual, as opposed to learning something well enough to be able to use that knowledge and apply it elsewhere.
  - textbooks are usually very sharply aimed at a given age/experience group and very explicit assumptions are made about the goals of a

## Nature of Product - Long Range

Content cont.

given course. How does this differ from an encyclopedia which attracts a relatively diverse bunch of people with different abilities and goals? Can we develop a sufficiently flexible or soft "curriculum" which can tailor itself to diverse needs and prior experience levels?

- to what extent can an electronic encyclopedia be "intelligent"? encyclopedia as active guide, helping user find his way through the domain, making connections and inferences based on user's input? encyclopedia as tutor? diagnosing problems user may have with particular subject matter and prescribing remedies or next steps? other aspects of "intelligence"?
- synthesis
  - with the partial exception of EB3, English language encyclopedias have ignored the task of synthesizing knowledge to any appreciable extent; they tend to be more dictionaries of info and knowledge. why is synthesis important? what are the key elements in tackling such a task?
  - conversely, how far can we go in atomizing the content so as to maximize flexibility without losing basic coherency? are there articles in an electronic encyclopedia on given subjects or is each 'article' constructed on an ad hoc basis from smaller parts for each user on the basis of his description of his needs?

## Nature of Product - Long Range

Content cont.

- could the degree of synthesis be variable, according to user needs?
- 4. Basic Description of the scope of an electronic encyclopedia; how far beyond current conception of what an encyclopedia is supposed to be are we going to go? encyclopedia as basic library?
  - components are 1.  
2.  
3.  
... dictionary, thesaurus, atlas  
n:
  - extent of 'database' and relationship to other databases
  - how much detail in electronic encyclopedia?
    - assuming that the electronic encyclopedia is basically an entry way (or first level) into the entire domain of knowledge, how to define this first level and the inevitable sub-levels?
    - how to handle current events? not only daily news but events which are sufficiently recent (from a month to a year) and sufficiently complex such that there has not been enough time to properly summarize them <sup>and</sup> integrate them into the encyclopedia itself? what is the difference between the way subjects are treated in news media as opposed to encyclopedias? what happens to these distinctions when the capability of an electronic encyclopedia exists?
    - should the encyclopedia provide a gateway to deeper levels of detail- bibliographies, full text of periodicals and books, other databases (NYT Information Bank, Dialog etc.)? what sort of gateway?

## Nature of Product - Long Range

Content cont.

5. How do people go about getting information and knowledge?
  - is it possible to classify the various directions people come from - ie. the types of questions and the pattern of inquiry?
  - how do people follow search trails; distinction between goal-oriented searching and browsing? how to accomodate both approaches in same system?
6. How to represent the structure of knowledge so that knowldege of the structure becomes an important component of the encyclopedia itself?
  - how to include the concept that knowledge is not static but "in process"?
  - value of the "travel" metaphor; advantages and disadvantages
  - how to provide for both overview and detail relative to any given subject? ie. how to provide user with both microscope or telescope at any given time?
7. Problems in learning theory and instructional design
  - "what if" learning; how it is motivated and encouraged? the role of simulations?
  - socratic method and discovery learning; what is its value? how is it implemented via computer?
  - interactivity - let's define this buzzword; people seem to use the same word to mean different things? what is the range of meanings?
  - media selection; guidelines for what works best in which cases, for whom? when to use still pictures, text, full motion video, animation or real-life? do we need photographs and motion pictures? *hi fidelity sound?*

## Nature of Product - Long Range

content cont.

8. What do we mean when we say that using an electronic encyclopedia should be "entertaining and fun"? why is this necessary? what are the different fantasies that people associate with learning, information retrieval etc? how to accomodate these and in so doing make <sup>the</sup> encyclopedia a more effective (and popular) tool?
9. World outlook, point of view?
  - it is inevitable that an encyclopedia reflect a basic philosophy (for example, how you deal with evolution with regards to crap like creationism will certainly reflect a philosophical outlook). with a project as massive and complex as an encyclopedia how do you ~~determine this philosophy~~ and make it explicit so that it can help guide the work and make the whole a coherent piece? who should be called on to help set the standards?
10. Do we want user-user communication on system so <sup>that</sup> for example, six people studying the same question could "work together", sharing notes, insights etc.?

## Nature of Product - Long Range

B. Technology (Basic technological decisions. In general these questions should be answered in the context of the answers given to the content issues raised above. Also, it probably makes sense to come up with two sets of answers to a lot of these questions - both an ideal solution and also a range of possibilities off of the ideal taking into account various realities like costs, market factors, timing etc.

### 1. Delivery

- Are there any viable alternatives to having the heart of the system on-line? what are the advantages and disadvantages of at least a partially on-line system? some issues to examine - flexibility, size of database, updating, sophistication of operating system, level of 'intelligence,' access to other databases?
- what are the basic configurations that should be considered? eg. on-line + videodisc in the home; all on-line; etc.?
- Assuming at least a partially on-line system what is the method of on-line delivery?
  - how much bandwidth do we need?
    - are we sending analog and digital data or just digital
    - broadband, baseband, narrowband
    - role of video and audio compression
    - cable vs. phone? present and future characteristics of both? technological, economic, legal(regulatory)



## Nature of Product - Long Range

Technology cont.

market etc.? potential role of optical fiber?

2. Hardware (recognizing arbitrary distinction between hardware and software). Given what we want electronic encyclopedia to be, what are the various hardware configurations that would give us what we want?

- what are the various components which would make up the hardware end of the system? which are the key elements? which need to be developed first? how much of the developmental work would be done by Atari?
- what kind of a processor in the home? (again this might include both a sense of the ideal and the ideal as it is tempered by reality. how much power do you need in the home processor to do what we want to do?
- what kind of display? importance of high resolution display? potential impact of high definition TV? possibility of working with Pioneer or Sony in this area?
- pointing devices, speech, sound and music?
- basic decision - will access to the system be limited to very specific hardware configurations or to a broad range of configurations with ~~some~~ ~~set~~ minimum standards?



## Nature of Product - Long Range

Technology cont.

3. Beyond text - (assuming an important role for full motion video)
  - videodisc; capabilities of different formats? are there viable alternatives to videodisc?
    - difficulties inherent in placing videodisc at user's end and integrating material on disc into encyclopedia via on-line software instructions?
    - possibility of using videodisc at head end to supply still frames to user on-line via frame grabber (a la "NewsPeek")? possibility of using videodisc at head-end to distribute motion pictures?
    - development of still-frame-with-audio videodisc capability?
    - transitional nature of videodisc: what replaces it? when? what is necessary at user's end to receive full motion digital video? when, at what cost ?
4. Integration of electronic encyclopedia with other computing applications, particularly word processing?
5. Question of personalizing database; ie. entering your own notes (in "margin") and saving for later either in system itself or at user's end? can system maintain record of user's last search?
6. What kind of a programming language or languages do we need to implement this system? do we adapt an existing language or develop something new?
7. Of all the things we say we want to do in the 'content' section, what are the most difficult from a computer science point of view? when is it likely that solutions

## Nature of Product - Long Range

### Technology cont.

will be found? where should we be looking for the solutions?  
 are certain questions key such that coming up with a solution  
 is a sine qua non or such that finding solutions to them  
 will greatly facilitate finding answers to other questions?

### 8. Nature of the interface?

- how to make interface function effectively with people coming to system with diverse cognitive styles and approaches to information seeking and learning?
- how to facilitate browsing throughout the domain?
- nature of query language? how close to natural can it be, need it be?
- physical attributes? role of keyboard? importance of quality of display? touch screen? mice? joysticks? voice, music, etc.
- a metaphor to represent the system to the user? cartoon character? other?

### 9. User Communication and Feedback?

- how to provide for user feedback to system? types of feedback wanted? user ideas on how to improve operation of system? user ideas on how to improve content?
- how to provide user to user communication (if we want it)?

10. Time - how long before everything comes together - technology, market, development of actual content? Are we talking about 10 years, 15 years, more? How long just to assemble content? How long to develop technology?

11. Budget - how much will it all cost (develop technology, produce content, projections for maintenance costs, updating etc.)

## Short Range, Medium Range ... Getting from Here to There

Past discussions have assumed that we would put out a short range product rather than wait the 10 years or more before the long range product is "ready." Is this viable? What sort of short range product or products? Whatever the answers to these questions, the principal factor in deciding on the short range product should be how it will contribute to the long range goal (as opposed to immediate market conditions, etc.)

### 1. Constitutional Strategy

- It has been suggested that an on-line short range product could be designed so that any part of the system could be changed without affecting other parts, allowing for the evolution of the system from primitive short range to advanced long range without seriously disrupting service. How realistic is this?
- how "good" does the short range product have to be to indicate (or at least not contradict) a sense of how exciting the long range product will be?
- how soon could we put something on the market which is sophisticated enough to evolve into the long range product? If the time period is too long (how long is too long?) do we need to start thinking in terms of short range products which would stand alone (and not evolve directly into the long range product) and a medium range product (perhaps 3-5 years from now which would be sophisticated enough to base a constitutional strategy on?

## Short Range, Medium Range ...

### 2. Reasons for short range product and associated questions

- way to earn and learn at the same time; create minimal system which generates revenues and provides rich environment for learning much that needs to be learned in development of long range product. market considerations?
- establish market position; is there something going on in the marketplace (eg. other electronic encyclopedia's) which would necessitate getting a particular type of product on the market by a certain time?
- morale booster
- material from short range product may be suitable for use as part of long range product - eg learning modules on specific subjects or footage from videodisc programs
- are these reasons valid? are there others? implications for type of product?

### 3. What is the range of viable short (and medium) range products

- 1.
2. what would each contribute?
- 3.
- etc.

### 4. (assuming partnership with EB) - how suitable are existing EB products (particularly EB3 and Compton's) for adaptation to on-line system or some other electronic form? What criteria do we judge this on? (This is not a technical question, rather an attempt to get a feel for what the products would "look like" if we just adapted what's available from EB

Short Range, Medium Range ...

5. If the short range product is at least in part an on-line system, how to handle illustrations? all computer? printed matter? feasibility of frame grabber at user's end to grab still pictures from videodisc at head end?
6. Would we need to conduct tests of an on-line system before we put it on the market, even if it is seen as a short range product?
  - what would we need to learn from test?
  - what content and technology would we use?
  - where would test be conducted? (participation of WASEC?)

Market / What Business Are We In? Who Are We In It With?  
(assuming some form of on-line service)

1. Publishing (two aspects - creation of product and  
distribution - various possibilities)

- does the product we are selling have both hardware and software components?
  - database which can be accessed by any terminal
  - database which can be accessed only by Atari HW
  - database which can be accessed by any terminal, but not with full bells and whistles (eg. not with full graphics, sound, display quality etc.); full bells and whistles come only with Atari HW
  - what are the tradeoffs here in terms of market size and the quality of the product?
- who distributes?
  - Atari-EB direct to user
  - Atari-EB to WASEC(?) to user or WASEC to cable companies to user
  - Atari-EB to all distributors of electronic databases capable of distributing the system
  - market and technological implications of above?

2. How broad is the market?

- besides homes, schools and libraries is there a market for the type of service we are considering to business? (what level of business?) which aspects of the service in particular might be applicable? implications for content and technology?
- international considerations; is there a market for this outside the US - implications for content and technology? Tie-ins to Paris World Center project and research?

### Market/ What Business Are We In ...

3. Relationship of electronic encyclopedia to other products, services, etc. planned by Atari, WCI, and WASEC? long or short range? Implications for content and technology?
  - can parts of the electronic encyclopedia be packaged and sold separately? conversely can materials developed by WCI or WASEC operations be used in electronic encyclopedia?
4. Revenues
  - are people going to pay per use, by subscription, combination of the two? pros and cons?
  - how do people pay for information, non-electronic and electronic?
5. Relationship to whole field of teletext and videotex?
  - very complex field; given tremendous range of predictions and assortment of plans somebody out there must be wrong. is anyone on right track?
  - range of existing and proposed services; rationale behind various planned offerings and how the electronic encyclopedia might relate to them?
  - how have consumers reacted to initial offerings?
    - Prestel, Source, CompuServe? how do people use these services? what do they like, dislike? growth rates?
    - same questions for Dialog, Nexis/Lexis?
  - which among existing and proposed services are likely to succeed? which won't and why? how do these services relate potentially to electronic encyclopedia? implications for content and technology?

## Market / What Business Are We In? Who Are We In It With?

### Partners

- assuming EB is interested, are there other partners that might be considered:
  - Lucasfilm?
  - WASEC?
  - a partner or partners who held one or more of the following attributes:
    - technical expertise
    - \$\$\$\$\$\$\$\$
    - intellectual breadth
    - daily and current news
    - 
    -
- given the potential for international distribution, do we want international partners from the beginning? which ones? on what basis? is the service to be delivered "as is" to other countries or reconfigured and "personalized" (actually "nationalized") - eg. a Canadian edition etc.?

### Alternatives to EB

- supposing EB decides not to participate, who would other suitable partners be? how to make up for EB name, especially in terms of giving project immediate and recognizable intellectual weight in order to secure broad participation from scientific and scholarly community?
- are there other suitable encyclopedias?
- what about an Atari-Harvard Encyclopedia or an Atari-Smithsonian encyclopedia?



Market / What Business Are We In? Who Are We In It With?

## Alternatives to EB cont.

- having raised the question of what we would do if EB decided not to participate, perhaps we should ask ourselves real clearly right now if EB is our first choice among all possibilities? what do they bring that no one else could? what else do they bring to the project? what are the disadvantages of working with EB?

Particular questions to be addressed in Proposal to EB should we get to that point

- relation to ongoing EB products and business? what kind of safeguards do they want? can we provide them?
  - relation to future EB products (ie. besides the electronic encyclopedia?
- role of EB sales force in new venture, if any?
- nature of EB's contribution to project - besides the original database? are they going to contribute any personnel? what else?
- structure of the new venture?
  - joint venture?
  - \$ formula? who puts up what, gets what on what schedule?
  - board of directors, how many from where?

## How to Organize Work of Creating the Electronic Encyclopedia

### 1. Divide work up into basic areas

1. development of content
2. development of software that runs system
3. development of hardware that system runs on - at user's end and at head end
4. development of marketing capability

are these categories correct? decide how the parts interrelate? what needs to be done in what order?

### 2. Staffing requirements

- what are the attributes of an electronic encyclopedist?
- what categories of people are needed? in what numbers? where do we get them from? start compiling lists of potential people

### 3. Geographical considerations

- given tasks at hand, where should project be located? what city or cities? how centralized or decentralized?

### 4. given complexity and diversity of task, how to maximize intellectual energy and input at least cost? possibility of locating project on university campus ("Atari-EB Institute for .....)? what would be the advantages and disadvantages of this? likely universities?

### 5. how to design formative research into project right from the beginning?

### Getting Started

At this point we need a relatively small group of people who can consider the project as a whole, perhaps dividing up areas of investigation, but bringing it back to the group in a consistent way for analysis and synthesis.

- who should be in such a group?
- what stage should it bring us to, by when?
- other projects to look at, experimental and commercial?
- journals to review?
- conferences to go to?

### Miscellaneous questions?

- what other projects are going on at Atari that might relate to this work? Is there an Atari-Qube expt.
- how to avail ourselves of the experience and research accumulated by WASEC
- ten outrageous and radical ideas:
  - 1.
  - 2.
  - 3.
  - 4.
  - 5.
  - 6.
  - 7.
  - 8.
  - 9.
  - 10.